Using Ohms Law

For each problem, sketch the circuit, using schematic symbols. Label each appliance with the given quantity, and calculate the missing variable.

1. A simple circuit is built with a 1.5V battery, wires and a bulb with 3.0  resistance. What is the current?

2. A 1.5V battery is put in a circuit with a bulb of unknown resistance. A current of 0.25A is measured. What is the resistance of the bulb?

3. A car battery is hooked to a bulb that has a resistance of 10 The desired current is 1.4A. What voltage must the battery provide?

4. A circuit is wired with a power supply, a resistor and an ammeter (for measuring current). The ammeter reads a current of 24 mA (milliamps). Determine the new current if the voltage of the power supply was ...

a. ... increased by a factor of 2 and the resistance was held constant.

b. ... increased by a factor of 3 and the resistance was held constant.

c. ... decreased by a factor of 2 and the resistance was held constant.

d. ... held constant and the resistance was increased by a factor of 2.

e. ... held constant and the resistance was increased by a factor of 4.

f. ... held constant and the resistance was decreased by a factor of 2.

g. ... increased by a factor of 2 and the resistance was increased by a factor of 2.

h. ... increased by a factor of 3 and the resistance was decreased by a factor of 2.

i. ... decreased by a factor of 2 and the resistance was increased by a factor of 2.